

WHAT IS CLAIMED IS:

1. A semiconductor laser device, comprising:
a semiconductor substrate;
a first clad layer of a first conductivity type;
an active layer;
5 a second clad layer of a second conductivity type ; and
a protective layer of the second conductivity type; wherein
peak wavelength of photo luminescence in the active layer in a
region near an end surface of a laser resonator is smaller than peak
wavelength of photo luminescence of the active layer in an inner region of
10 the laser resonator; and
first impurity atoms of a second conductivity and second impurity
atoms of the second conductivity exist mixedly in said active layer in the
region near the end surface of the laser resonator, with concentration of
said first impurity atoms being higher than that of the second impurity
15 atoms.
2. The semiconductor laser device according to claim 1, wherein
in said second clad layer in the region near the end surface of the
laser resonator and in said protective layer also, first impurity atoms of the
second conductivity and second impurity atoms of the second conductivity
5 exist with the concentration of said first impurity atoms being higher than
that of the second impurity atoms.
3. The semiconductor laser device according to claim 1, wherein
concentration of the second impurity atoms in the active layer in the region
near the end surface of the laser resonator is at least 1×10^{16} atoms/cm³ and
at most 1×10^{18} atoms/cm³.
4. The semiconductor laser device according to claim 1, wherein
the first impurity atoms are the same as the impurity atoms
contained in the second clad layer near the active layer.

5. The semiconductor laser device according to claim 1, wherein said first clad layer contains Si atoms.
6. The semiconductor laser device according to claim 1, wherein said semiconductor substrate contains GaAs, and a semiconductor layer stacked on said semiconductor substrate contains an AlGaInP based material.
7. The semiconductor laser device according to claim 1, wherein the first impurity atoms are Be atoms.
8. The semiconductor laser device according to claim 1, wherein the second impurity atoms are Zn or Mg atoms.
9. A method of manufacturing a semiconductor laser device, comprising the steps of:
- growing, on a semiconductor substrate, a stacked structure including a first clad layer of a first conductivity type containing Si atoms, an active layer, a second clad layer of a second conductivity type containing first
- 5 impurity atoms having a second conductivity, a conduction facilitating layer of the second conductivity type and a protective layer of the second conductivity type;
- forming a film as a source of impurity diffusion containing second
- 10 impurity atoms having the second conductivity, in a region near an end surface of a laser resonator of a wafer having said stacked structure grown thereon;
- forming a dielectric film containing Si atoms and thicker than said
- 15 film as a source of impurity diffusion on a surface of said wafer; and
- annealing said wafer to diffuse said first impurity atoms contained in said second clad layer in the region near the end surface of the laser resonator and said second impurity atoms contained in said film as a source of impurity diffusion in the region near the end surface of the laser resonator into the active layer, to make peak wavelength of photo

20 luminescence of the active layer in the region near the end surface of the laser resonator smaller than peak wavelength of photo luminescence of the active layer in an inner region of the laser resonator.

10. The method of manufacturing a semiconductor laser device according to claim 9, wherein

said film as a source of impurity diffusion contains Zn_xO_y (x and y are numbers not smaller than 1).

11. The method of manufacturing a semiconductor laser device according to claim 9, wherein

said dielectric film contains any of Si_xO_y , Si_xN_y and $Si_xO_yN_z$ (x, y and z are numbers not smaller than 1).

12. The method of manufacturing a semiconductor laser device according to claim 9, wherein

said film as a source of impurity diffusion has a film thickness of at least 5 nm and at most 50 nm.

13. A method of manufacturing a semiconductor laser device, comprising the steps of:

5 growing, on a semiconductor substrate, a stacked structure including a first clad layer of a first conductivity type containing Si atoms, an active layer, a second clad layer of a second conductivity type containing first impurity atoms having a second conductivity, a conduction facilitating layer of the second conductivity type and a protective layer of the second conductivity type;

10 forming a film as a source of impurity diffusion containing second impurity atoms having the second conductivity and Si atoms, in a region near an end surface of a laser resonator of a wafer having said stacked structure grown thereon; and

annealing said wafer to diffuse said first impurity atoms contained in said second clad layer in the region near the end surface of the laser

15 resonator and said second impurity atoms contained in said film as a source
of impurity diffusion in the region near the end surface of the laser
resonator into the active layer, to make peak wavelength of photo
luminescence of the active layer in the region near the end surface of the
laser resonator smaller than peak wavelength of photo luminescence of the
20 active layer in an inner region of the laser resonator.

14. The method of manufacturing a semiconductor laser device
according to claim 13, wherein

said film as a source of impurity diffusion contains $Zn_xSi_yO_z$ (x, y and
z are numbers not smaller than 1).